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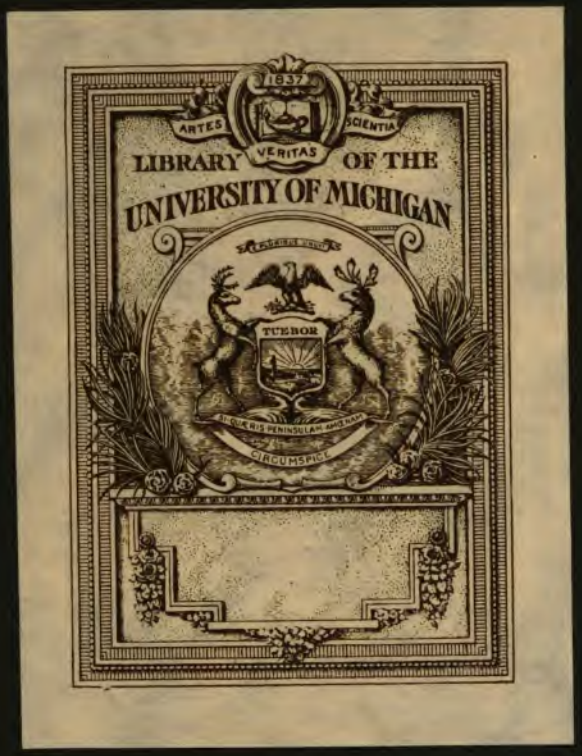
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BREWERY ACCOUNTS

BY

FRANK W. THORNTON, C.P.A.

RONALD ACCOUNTING SERIES

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J. E. STERRETT
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PREFACE

During the last twenty years the percentage of gross profit on manufacturing operations in general has greatly decreased.

No business has suffered more from this shrinkage than that of brewing, for while in other lines of manufacture selling prices can be adjusted to meet increased manufacturing cost, such adjustments seem almost hopeless in the brewing business.

Prior to 1890 the profits of breweries were so large that close accounting was not indispensable; for so long as the volume of business was maintained or increased, and the physical operations of manufacture were fairly well conducted, a reasonably good profit on capital invested was assured.

This prosperous condition led customers to impose on breweries for loans, gifts, etc., and to seek their aid in all financial troubles. Such aid was very freely given; and the disposition to extort from brewers unreasonable gratuities, allowances and favors grew, and still continues.

Increase in running expenses, cost of materials and bad debts have so reduced the margin of profit that it has become essential not only to have correct cost accounts, but to arrange the books so that the brewery managers may ascertain without delay the results of current operations.

An annual or semi-annual profit account no longer serves: monthly reports must be had, and that promptly, so that leaks may be stopped before serious losses are incurred.

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Some brewers still cling to old accounting methods, and object to pay for the slight increase in clerical work necessary if they wish to obtain prompt information as to their profits on current operations. Such brewers must be left to learn by experience; and if present conditions continue, the lesson will be a very hard one.

The present book is intended to facilitate the keeping of modern brewery accounts with the smallest amount of labor consistent with the prompt preparation of reliable monthly operation reports.

No untried methods have been recommended; theory has in each case been checked by practice; and the methods outlined have been found to be satisfactory for the purposes for which they were designed.

F. W. THORNTON.

New York City, July 1, 1913.

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BREWERY ACCOUNTS

Part I—The Records of a Brewery

CHAPTER I

MANUFACTURING ACCOUNTS

Scope of Brewery Accounts

The accounts of a brewery cover two disassociated classes of operations: first, the manufacture of liquor, which can and should be accounted for with the strictest accuracy; and second, the sale and distribution of the liquor, from which arise the accounts of the customers, principally saloon-keepers. The accounts of these, for reasons to be set forth herein, are perhaps the most irregular and inexact accounts met with in large enterprises.

The principal books of a brewery are usually as follows, those marked "a" entering into manufacturing accounts, those marked "b" entering into selling and distributing accounts:

General ledger	a-b	Ordinary form
General journal	a-b	Special—Exhibit 1
Voucher register	a	Special—Exhibit 2
Sales books	b	Special—Exhibits 3-4
Sales ledgers	b	Special—Exhibits 5-6
Creditors' ledger	a	Ordinary form

3 / 8

Loan ledger	b	.....Ordinary form
Cash books	a-b	.....Special—Exhibits 7-8
License ledger	b	.....Special—Exhibit 9

Manufacturing Records

The cost of manufacturing includes cost of materials, brewing labor, refrigeration, steam and power, repairs to plant (not including barrels and kegs, and horses and wagons), provision for depreciation to machinery and buildings, and supplies. A small proportion of the cost of the office staff may properly be added.

The use of the voucher record to take up the purchases of materials need not be explained, but the record should be so arranged that inventory accounts for each of the principal materials (as "Malt," "Flakes," "Meal," "Grits," "Other Unmalted Cereals," "Glucose," "Hops." and "Sundry Materials") may be kept.

Materials are usually purchased in packages having a fixed content—hops in bales, with the weight marked on each bale; malt, grits, flakes, etc., in bags of 80 or 100 pounds. It is therefore easy to verify physically, at the end of each month, the stock on hand. This should always be done and the stock agreed with the balance of the inventory account.

On commencing operations, materials for a brewing are withdrawn from stock under direction of the brewmaster, who should keep a record of quantities taken. At the end of each month the recorded quantities are credited to the inventory accounts and charged to Manufacturing account. The quantity of liquor thus put in process of manufacture must be taken up as liquor in stock, in a book prescribed by the Internal Revenue Bureau, and afterward accounted for as liquor to be stamped before sale.

This government requirement makes it desirable that

at the end of each month the Manufacturing account, to which the materials have been charged, should be charged with the month's labor, steam and power, refrigeration, and brewery supplies and expenses, and then closed out to Liquor Stock account, charging the latter with the number of barrels shown on the register prescribed by the government.

This procedure is open to the objection that there is always a certain amount of partially manufactured liquor in stock which is recorded and valued as finished liquor. Its convenience, however, much more than offsets the theoretical objection. Although the liquor will remain in process for some time, the greater part of the labor in connection with brewing is expended in the first two or three days, so that the amount of error is not large. Moreover, there is a compensation that does not appear on the face of the records: the quantities are estimated by the Internal Revenue Bureau on the basis of measurements of the brewing-vats, with specific allowances—varying for ale and beer—for waste and shrinkage. These allowances exceed the actual losses, including beer consumed in the brewery; and in every well-kept brewery there is always on hand an excess, which may amount to two days' product, over the amount shown by the government record and the Liquor Stock account in the general ledger. The exact amount of this excess cannot be determined until the liquor is finally put in packages for sale; but as soon as the excess becomes higher than the amount indicated above, the brewery should voluntarily take up, on the books and in the government record, a part of the estimated excess.

Materials Used in Brewing

The materials include (1) the alcohol-producing materials, which may be malt with or without the addition of

meal, grits, flakes, glucose, cane sugar, or any unmalted cereals or cereal products; (2) a bitter principle, almost invariably hops, or hop extracts; and (3) water and sundry brewing materials. These sundry materials include Irish moss; porterine and caramel, for coloring; filtermass; sulphurous anhydride; gelatine for fining, and other substances of small importance.

Alcohol-Producing Materials

As the relative prices of the alcohol-producing materials vary widely, partial substitutions of one for another are frequent, and it is desirable that the accountant be in a position to ascertain that the quantity charged against the liquor manufactured is, within reasonable limits, justified by the output.

For this purpose the reduction to a common standard of the brewery values of varying materials is necessary, and the most convenient standard is found to be the quantity of glucose each is capable of producing, such quantity to be compared with the glucose corresponding to the alcohol produced plus glucose left unfermented in the finished product.

It may be noted here that no alcohol is produced by fermentation from any substance other than glucose; and that where malt, meal, or other cereal products are used the constituent that eventually becomes alcohol must first pass into the condition of glucose. It follows, therefore, that glucose, or any material producing glucose, is not an adulterant.

The accountant should not be led by his calculations to the conclusion that any material showing the cheapest glucose can be substituted entirely for all others, as, for technical reasons connected with the production of yeast and with flavors produced incidentally by certain non-

alcohol-producing constituents, the possibility of substitution is limited.

In ale brewing, glucose is added to hasten fermentation, even though the same amount of alcohol might be produced more cheaply from malt.

Analyses of the principal alcohol-producing materials show their relative values to be approximately as follows:

Pure glucose	1.00
Malt (barley)	.64
Flakes (rice)	.78
"Cerealin"	.78
Meal (corn)	.58
Cane sugar	1.00
Sugar-glucose (Corn Prod. Ref. Co., solid)	.70
Sugar-glucose (syrup)	.60
Malt (wheat)	.68

The content of standard American lager beer is from 3 to 3¾% alcohol and from 3 to 5% unfermented glucose, the average being about 3½% alcohol and 4½% unfermented carbohydrates. Ordinary American light ales contain alcohol, 4¾%; carbohydrates, 5%. Cheap beers sold at seaside resorts, etc., are not only poor in alcohol but are attenuated so far that the amount of unfermented carbohydrates may fall below 2%.

Glucose produces 51.1% of its weight of alcohol. The foregoing figures, therefore, show that to produce a barrel (262 pounds) of lager beer of standard quality about 29½ pounds of glucose are required, and to produce a barrel of light ale about 37 pounds of glucose.

The manner of using these figures in checking the consumption of material may be made clearer by an actual example:

A brewery produced in a certain period 63,240 barrels of ale and 50,645 barrels of lager beer. The glucose required was:

Ale, 63,240 × 37 lbs.
Beer, 50,645 × 29½ lbs. } average 33.67 lbs. per barrel.

The actual consumption of materials was, per barrel:

		Glucose
Malt	32.5 lbs. × .64 =	20.80 lbs.
Flakes	5.07 lbs. × .78 =	3.96 lbs.
Sugar (Corn Prod. Ref. Co., solid)	11.2 lbs. × .70 =	7.84 lbs.
Total per barrel		32.60 lbs.

It appears from these figures that the product was a little lighter than the average standard liquor; analyses showed that it was so.

Almost all breweries frequently have analyses made of their products, special analysts being employed by the brewers' associations for this purpose. Exhibit 10 (Chapter XV) shows the details of the computation of the alcohol values of brewing materials. Exhibit 11 shows the glucose content of other standard grades of malt liquor, and from the figures given the consumption of materials for any given grade may be checked.

Hops

The bitter principle used in brewing, which properly may be hops, or hop extracts, or the so-called "lupulin," which is really a hop extract and not chemically pure lupulin, cannot be checked in the same manner as the alcohol-

producing constituent. Hops vary widely in price and strength, but over three years, from 1910 to 1912, the figures of a large number of breweries show a variation of between 11 and 18 cents per barrel. During this period Western hops sold from 12 to 18 cents per pound, and the highest consumption of hops did not exceed one pound per barrel.

Labor and Expenses

Charged against the cost of manufacture should be the labor of the brewmaster, kettlemen, all employees engaged in operating the plant, including rackers, but not cellarmen, barrel-washers, nor any employees whose work takes up the product after racking. These latter employees are engaged in work properly chargeable to distribution and sale.

It is preferable to keep separate accounts of the labor and other costs of steam and power and of refrigeration; and these two accounts should be closed out into the Manufacturing account at the end of each month.

Cost of Output

The cost per barrel for the various items entering into brewing cost should, at the prevailing rate of wages in the Eastern part of the United States at present (1913), be approximately as follows:

COST, IN CENTS PER BARREL, FOR ANNUAL OUTPUT IN BARRELS

	100,000 to 200,000	200,000 to 300,000
Brewing labor	18-22	16-18
Repairs to machinery	3	3

Depreciation of machinery and plant, etc. (not including floating cooperage nor wagons, but including fixed cooperage)	7-9	6-7
Steam, power, refrigeration, including coal:		
For lager beer and carbonated and sparkling ale	18-20	15-18
For stock and sour ales	10-12	8-10
Supplies, taxes, brewing expenses	15-17	12-15

The depreciation of buildings cannot be stated in terms of cost per barrel; the values of brewery buildings vary very widely, and the depreciation depends largely on the character of the structures. It may be noted, however, that the construction of brewery buildings is usually not only of great strength and durability, but is of such plain, bare character that there is very little deterioration of windows, doors, partitions, etc. On the other hand, a brewery building is of very little use for any other purpose.

While the figures as given above are for plants of varying capacity, it is assumed that they are operating at their normal capacity. The economy of these plants suffers severely if they be too large for their trade. Refrigeration and steam and power are especially costly in a straggling or underworked plant.

Most breweries attempt to keep an account of liquor wasted and consumed on the premises. Careful investigation shows that these accounts are meaningless. The surplus over the amount which the rules of the Internal Revenue Department require to be taken up is much greater than the amount consumed; it also varies with weather and other conditions, and the brewery office cannot check by the inventory accounts the amounts actually consumed on

the premises. The figures furnished to the brewery office showing the amount consumed are purely fictitious. As little or no restriction is placed upon the consumption in the brewery, it is difficult to see what purpose the figures serve.

Brewers' Grains

The spent grains should be accounted for and taken up as a deduction from manufacturing cost. In cities, the grains will bring from 4 to 6 cents per barrel brewed; in some country districts, where cattle feed is needed, 10 to 12 cents per barrel is often obtained. On the other hand, in Texas and California, where cattle feed is cheap, only 2 cents per barrel can be recovered.

Use of Ammonia, and Sale of CO_2

Ammonia is used in most refrigerating plants, but some breweries have installed a system by which the carbon dioxide gas liberated in the process of fermentation, which amounts to about 97% of the weight of alcohol produced, is collected and used in the refrigerating machine instead of ammonia. In such breweries the uses of the gas are three: part is used to carbonate the product; part, as stated above, for refrigeration; and part is sold in cylinders for the purpose of carbonating other beverages. The cost of ammonia is small, not exceeding 1 cent per barrel, and the amount of CO_2 sold does not often exceed 5 cents per barrel brewed. The cost of power is slightly greater where the CO_2 refrigerating system is used, so that the accounts will not be much affected by this difference in brewing practice.

Brewery Cost Accounts

No useful purpose would be served by cost accounts

showing the separate costs of individual brewings. The product is so constant in character, so long a period in process, and the several brewings are so often consolidated before the exact output of each can be determined, that the only cost accounts of value are those taking up the whole output for a period of, say, one month.

All the figures may be obtained from accounts kept in the general ledger. A form of report, showing the origin and treatment of the several items, forms Exhibit 12 (Chapter XV).

All the inventory accounts in the general ledger, of materials as well as of liquor, should be arranged to show not only values but quantities also. The number of such accounts is so small, and the expression of quantities so simple, being confined to records of weight in the case of materials, and of barrels in case of liquor, that no difficulty is experienced in recording them by the side of corresponding entries of values.

If a brewery produces two or more different grades of liquor, and it be desired to keep separate cost accounts for each, this purpose will be served by charging against each grade the materials used, distributing the labor and expenses of brewing over the whole product on a per barrel basis. In order to carry out the separation, separate manufacturing and liquor stock accounts are required. Upon the whole, there is little difference between the cost per barrel of brewing ale and lager beer.

Sales of lager beer and ale are invariably separated on the books, if for no other reason, because the comparatively intermittent character of the ale trade makes it economical to record sales in a somewhat different manner. (See Exhibits 3 and 4.)

The accurate and economical separation of the expenses of distributing and selling, as between ale and lager beer,

or between varying grades of ales, is impracticable. Here, again, no serious error arises in charging the expenses to the various grades on a per barrel basis applicable to the whole product.

When separate buildings, plant and personnel produce ale and beer respectively, the separation of cost factors may be more accurate, but this seldom occurs, especially as the ale and beer trades are seasonal and to a large extent mutually complementary.

General Manufacturing Expenses

General manufacturing expenses include insurance, taxes, current repairs, water, supplies for the brewery, and a proportion of office expenses.

Insurance should be provided for by a monthly credit to Insurance account, with a corresponding debit to General Manufacturing Expense. Insurance cost, as paid, should be charged to the Insurance account, the debit balance of such account representing the value of insurance unexpired.

Taxes should be treated in the same manner, except that the balance of the Taxes account may represent either taxes paid in advance or taxes accrued and unpaid.

Current Repairs may be charged as expenses are incurred; care should be taken not to charge to this account renewals and replacements of machinery, etc. Replacements and renewals of this character should be charged against the reserve for depreciation of plant, which should be sufficient to provide for them in addition to covering the depreciation of non-renewable assets. In this way the burden of renewals will be anticipated during the period of use, and not charged wholly against the period in which renewals take place.

Water is frequently obtained from wells owned by the brewery, when the cost of obtaining it will be absorbed

in the accounts for steam and power and repairs. If purchased, it will be by meter measurement, and the meter readings can be taken monthly and charged to this account.

General brewery supplies, such as hose, brooms, small utensils and tools, may be taken up as expense when purchased.

If a proportion of office expenses be charged to the Manufacturing Expense account, which is desirable, the charge is put on the books by journal entry, as follows:

Manufacturing Expense (proportion)
Selling Expense "
Office Salaries and Expense
(total for month)

Summary of Manufacturing Records

Purchases of materials.—Entered in voucher record, posted to inventory accounts in general ledger.

Withdrawals of materials for brewing.—Journalized monthly; charged to Manufacturing account.

Quantities brewed.—Entered in revenue stamp book, recorded by brewmaster, transferred monthly to Liquor Stock account.

Labor.—Distribution of pay-roll such that each department is charged with its proportion, the manufacturing labor other than that for steam and power and refrigeration being charged directly against Manufacturing account.

Steam and power and refrigeration.—Coal and labor and sundry expenses, charged first to these accounts, the total at the end of the month being closed out to Manufacturing account.

Depreciation of plant.—Monthly charge to Manufacturing account by journal entry, establishing a depreciation reserve.

Current repairs.—Repairs, not replacements, to be recorded separately in the general ledger, the account being closed out at the end of each month to Manufacturing account. These repairs include repairs on machinery and plant, but not on floating cooperage, nor on wagons, nor on office fixtures. They do not include coopers' wages, which are part of the cost of distribution.

Current repairs, water, supplies.—Charged through voucher record; taxes and insurance charged against reserves provided therefor, through journal.

Closing of Manufacturing account.—The account, after taking up all the monthly charges, to be closed by journal entry into Liquor Stock, the barrelage so charged to Liquor Stock being the net amount brewed, as set forth in the internal revenue stamp book and agreed with the brewmaster's record.

CHAPTER II

GENERAL METHODS AND CONDITIONS OF SELLING

In order that the accounting of a brewery may be better understood a general description of selling methods and conditions is needed.

Most of the customers of breweries are saloon-keepers, often men of little acquaintance with modern business methods and sometimes illiterate. The selling arrangements made with such men are necessarily different from those usual in other businesses.

Loans to Customers

Where the saloons are not controlled, by ownership or otherwise, an arrangement is generally made by which the brewery fits up the saloon and furnishes the saloon-keeper with money to stock his place with furniture and sometimes with spirits and cigars. These loans should be covered by notes of the customer and also by chattel mortgages on the fixtures. It is not expected that the whole of the loans will ever be repaid in cash. On the contrary, it is expected that when the fixtures wear out the saloon-keeper will probably ask for a new loan to refurnish.

For repayment the brewery must trust in part to an arrangement by which the discount actually allowed in cash on the payment of the customers' weekly beer accounts shall be supplemented by an additional discount to be applied

against the loan. In this way the loan account should be gradually diminished to such an extent that, after a new loan is given, the ledger balance shall not be greater than the original loan. In some cases the customers do not know that this extra discount is being applied against their loans. Indeed, some do not care, because they never intend to repay the loan, and if compelled to do so will transfer their trade to some more accommodating brewery.

Just how much should be provided for the purpose of extinguishing loans is a matter for the discretion of the brewery manager, and the auditor is confronted with a difficult task in judging of the value of loan accounts. He must be guided by several considerations. In checking over a long period he can see that individual loans do not increase in amount; he can see that the same thing is true of the loan accounts as a whole, taking into consideration increases or decreases of business done; and he can ascertain that the total amount of loans standing on the books does not exceed a certain arbitrary figure per barrel, differing in various localities, but recognized in each, which is the figure that other breweries are willing to pay to obtain the trade. For example, in New York City it has been generally recognized that a brewery will take over trade from another brewery, paying, to clear the saloon-keeper from liens of the former brewery, a sum equal to about $4 per barrel of annual trade. It is plain that the value of a loan account is dependent upon the trade which it controls.

Loans are also made for the purchase of licenses, but these loans are treated differently. The saloon-keeper recognizes his obligation to repay license loans, and does so in regular instalments. Breweries make a practice of obtaining from the saloon-keepers assignments of the licenses, but it is not practicable for the licenses to be purchased by the breweries in their own names, for the reason that

a violation of the legal restrictions upon saloons is considered as a violation, not by the saloon, but by the owner of the license; consequently, if the licenses were in the name of a brewery, a violation by one saloon-keeper, entailing forfeiture or indorsement of license, would work forfeiture or indorsement of all licenses owned by the brewery.

Selling Methods

Lager beer is sold in the United States at a conventional price, usually $8 per barrel, subject to a heavy discount, amounting to from 20 to 40%. As previously stated, part of this discount may be allowed to the customers when cash payments are made, and part be retained by the brewery, to be applied against the customers' loan accounts.

There are also other allowances to customers which are really discounts, and no part of the accounting should be given more care than the correct treatment of such allowances.

In figuring the net selling price, all discounts and allowances, all amounts credited to the loan accounts, and rebates of every kind, including New Year's gifts, credits for rejected liquor, and deductions allowed by collectors, should be treated as deductions from the gross selling price.

Ales are sold at a lower conventional price than beer, the discounts being smaller, not exceeding 20%. In other respects the remarks as to deductions from selling prices of lager beer apply also to ales. It should be noted, however, that ales are sold on longer credit than lager beer, and are not made the basis of loans to such a great extent. The indebtedness of customers who purchase ale is, therefore, principally on their current liquor accounts, the loans being small; lager beer accounts should be paid more promptly, and the indebtedness of lager beer customers is more largely in respect of loans.

Brewery Salesmen

The collection of money and sale of liquor are generally carried out by the same employees, and the personal influence of these employees with the saloon-keepers is of great value in controlling trade. Their compensation may take any one of three forms: (1) A fixed salary plus expenses; (2) a fixed salary plus expenses, plus commission; or (3) commission only, all expenses being borne by the collector.

Where commission only is the rule, it is not unusual to allow 5% on the amount of collections—not on the amount of sales. Such collections are collections for liquor only, and do not include collections on account of licenses or loans. Small saloons, and saloons purchasing ales, while paying a higher price for liquor, are so exacting as to "spending money" (the money spent by the brewery salesman over the bar) that salesmen do not care to handle their trade on the basis of commission only.

Where salesmen receive salary and expenses, with or without commission, the expenses, consisting largely of spending money, should be passed upon by the manager. As the spending money is admittedly for the purpose of buying drinks over the bar, the liability to abuse is evident.

The fixing of prices should be by the manager, and salesmen should have no power to change prices. The prices so fixed should be permanently recorded. This point will be referred to later in connection with customers' accounts.

In any case, the expenses and salaries of collectors should not greatly exceed 5% of the net sales, unless the trade includes a considerable proportion of ale sales, when the cost may rise to 6%.

Cost and Selling Prices

It is a remarkable feature of the brewery business that the

selling prices do not follow increases and decreases in the cost of materials. The selling prices are almost immovably fixed, and the brewer's profit or loss must absorb almost the whole of the fluctuations in the prices of materials. During the ten years from 1902 to 1912 the price of malt doubled, increasing the cost per barrel of materials about 60 cents, whereas during this period no general increase in selling price has taken place.

Controlled Customers

Breweries having sufficient capital are adopting tne plan of purchasing saloons, renting them to customers who undertake to sell only the beer brewed by the owners.

In such cases the loans are small or non-existent. Indeed, for desirable locations, tenants have paid a bonus for the privilege of entry. Sales and collections can be made at greatly reduced expense; bad debts are small; credits are short; and the prices obtained for liquor are higher.

The same objects are attained to some extent by breweries renting saloons and subletting them to tenants under the restrictions referred to above.

CHAPTER III

CUSTOMERS' ACCOUNTS

The discussion of manufacturing accounts has set forth the manner in which the cost of liquor is determined and the Liquor Stock account established. This accounting has been kept entirely separate from the accounts covering sale and distribution, having no logical or practical connection therewith.

Routine of Orders

When an order is received from a customer, a requisition or cellar slip—Exhibit 13—is issued by the order clerk, and is filled by the cellarman's delivery to the shipping clerk of the liquor ordered. These cellar slips may with advantage be so written up that all the orders to be delivered by any one driver shall be on one cellar slip.

The shipping clerk affixes the proper stamps and delivers the liquor to the driver with receipt forms—Exhibit 14—to be signed by the customer. These receipt forms also have spaces for records of returned empties and a detachable slip on which the driver receipts for empties returned.

These receipts form the basis for the entries of sales in the sales books. The sales books should be compared daily with the cellar slips, and the total sales, after such verification, be entered in the revenue stamp book and agreed with the stamps canceled and affixed.

Customers' Pass-Books

Most breweries supply their customers with pass-books, which are records in which the deliveryman enters all beer delivered and all empties returned; and the collectors each week extend the money value of the beer delivered, crediting cash collected and discount allowed (not including discounts applicable to the reduction of loan accounts). Any special rebates and allowances should be entered only on presentation of the pass-books at the brewery office, and when all these entries have been made the balance as per pass-book should agree with the balance on the brewery ledger. Separate pass-books for ale and lager beer should be provided, just as separate accounts are provided in the brewery ledger.

Combined Sales Book and Ledger

A convenient form of sales book and ledger combined, suitable for city beer trade for customers who receive supplies almost daily, is shown on Exhibit 5. This book is self-balancing, and saves much time both in original entry and in balancing the books at the end of the month. With its use the charges to customers are made weekly, on the basis of liquor supplied during the week. At the beginning and end of each month the portion of a week included in the month is to be treated as a week.

At the end of the month a journal entry is made, transferring from Liquor Stock account to Cost of Liquor Sold account the total number of barrels sold, at the average cost per barrel of all liquor in the Liquor Stock accounts. Sales accounts are then credited with the total gross sales as shown by the respective sales books.

Reserve for Discounts

As the discounts to be allowed are so large, and as a portion of the discount may be retained to be credited

against the customer's loan account, a provision for prospective discount must be made. Several methods are in use: some breweries make the provision on the basis of an estimated average selling price; some make an arbitrary provision at the end of a fiscal year, charging against the current monthly operations the amount of discount allowed, not on monthly sales, but on actual collections. These methods are incorrect.

The most satisfactory method is, first, to charge against Discount Reserve all discounts actually allowed on collections made; second, to ascertain by examination of each customer's account, at the end of the month, the amount of discount, including credits to loan accounts, to which the customer is entitled; and third, to make a journal entry, charging to discount expenses and crediting to the reserve a sufficient sum to leave the reserve with a credit balance equal to the total amount which the examination of customers' accounts shows to be allowable.

At suitable intervals, transfers from customers' current accounts to loan accounts should be made; these transfers will equal the amount of discount which the brewery allows, but which was not deducted on the payment of cash by the customers. Such transfers may conveniently be made by journal entry, debiting Discount Reserve and crediting the customer's loan account, no entry being made directly to the customer's current account. If this be done, the customer's current account will be credited only with the amount of discount actually deducted at the time of payment for liquor supplied. In most breweries this procedure is followed.

Out-of-Town Trade

The trade of most breweries is confined to the immediate locality of the plant, but some have a large outside

agency or out-of-town trade. Where the amount of out-of-town trade is small these sales may be merged with the general sales, account being kept of the freight paid, which, in making up monthly reports, should be treated as a deduction from the gross selling price. (See Exhibits 18 and 19.) Obviously, the selling price of liquor on which freight is paid should be higher than city sales by the amount of freight.

If the out-of-town or agency trade is large, it is preferable to keep separate sales books and general ledger accounts for such sales. The freight and agency expenses should then be treated as shown on Exhibits 18 and 19, so that the net selling prices for ale and for beer for city trade may be compared with the corresponding prices, after deducting freight paid, for country trade.

It is found that the special expenses of agencies, other than freight, completely neutralize any benefit that might be expected from the avoidance of the selling and distributing expenses of city trade. Country trade, therefore, should produce a net price, after deducting freight, equal to the price obtained in the city.

Statements—Collections

Statements of customers' accounts should be forwarded at least once a month by mail. Additional statements may be furnished to the collectors, but unless statements are sent directly to the customers at short intervals the collectors will be in a position to defraud the brewery. These statements should not show the discount to which a customer may be entitled, but which is to be applied against the loan account. The only items appearing on the statement should be such items included in the current liquor account as the customer may reasonably be expected to pay.

On making collections the collectors should report on a form similar to Exhibit 15. These reports may be placed in a binder and treated as a receiving cash book, or they may be copied out into a bound book. In consequence of the large excess of the number of items of cash receipts over the number of cash payments, it is found convenient to have separate books for cash receipts, the daily totals being transferred to the general cash book.

Postings to customers' accounts of cash received and discount allowed may be made either directly from the collectors' reports (Exhibit 15) or from the copies thereof entered in the receiving cash book, where such a book is kept.

CHAPTER IV

SELLING EXPENSES

The selling expenses of a brewery include:

Collectors' and salesmen's salaries
Collectors' and salesmen's commissions
Collectors' and salesmen's expenses
Bad debts
Signs and advertising
Repairs to saloon fixtures and beer machines and pumps
Office salaries and expenses
Brewers' association assessments (on per barrel basis)
Legal and sundry expenses

It is desirable that separate accounts for each of the above items be kept in the general ledger, the charges being posted from the voucher register and cash book. At the end of each month the accounts should be closed out to the Selling Expenses account.

Collectors' Salaries, etc.

In the pay-roll accounts, both those of collectors and the pay-rolls included in the office expenses, if the month does not terminate on the same day as the pay-roll period, the amount transferred to selling expenses should take up

the portion of a pay-roll period that overlaps, leaving a credit balance on the pay-roll accounts equal to the amount so overlapping. This credit balance is, of course, "wages accrued."

The compensation of collectors and salesmen has already been dealt with. The bookkeeping methods in relation thereto do not materially differ from those used for the recording of other salaries and wages, and need no comment.

Bad Debts

Most of the existing statistics relating to the bad debts of breweries are misleading and unreliable. This is so because, in the absence of provision for the extinction of the debt, by setting aside a part of the discount allowed on sales or otherwise, losses due to non-payment of loans are included therein, notwithstanding that such loans were negotiated with the knowledge that cash repayment would not be made. No loss should be treated as a bad debt except losses shown after making proper provision for writing off loans, as described herein.

It is not possible, however, to separate bad debts completely as between losses on beer accounts and losses on loan accounts, because, avowedly or not, the partial extinguishment of most loans is to be looked for by means of transfers of credit from the current liquor accounts, so that when loan losses appear they may be due, wholly or in part, to the failure of the brewery to recognize the necessity of setting aside, out of the receipts for liquor sold, sufficient to extinguish the loan within a reasonable period.

The figures of bad debt losses given in Exhibit 17 are prepared from accounts in which the provision for extinguishment of loans has been made as described in Chapter II of the present volume.

The accounting for bad debts should be by means of a monthly credit to Bad Debt Reserve and a corresponding charge to Bad Debt Expense. The amount so reserved should be computed on the basis of a given figure per barrel of sales; Exhibit 17 will give to the accountant opening the books of a new concern a fairly correct idea of the amount which should be set aside under varying circumstances, but only actual experience of the particular trade, covering several years, will enable a thoroughly reliable estimate to be made of the requirements.

In recent years heavy unforeseen losses have been occasioned by prohibitive laws, which cause saloon properties to become comparatively worthless. On the closing by law of saloons the breweries seldom recover more than a small percentage of the amounts due them. Such debts should be treated as special losses, and cannot well be provided for in the monthly reserves.

At the end of each fiscal period, or more often if convenient, ascertained losses should be charged off against the reserves, and a scrutiny made of all outstanding accounts to ascertain that the reserve is sufficient.

Bad debt losses occur not only when customers become insolvent and abandon business; it often becomes necessary for breweries to abate a portion of a customer's indebtedness, both on loan and current liquor accounts, even though the customer continue in business. When this is done, such abatements should be made only by the managers and directors of the brewery, and not on the authority of any minor officials.

In making charges to bad debt account it must be remembered that provision for heavy discounts has already been made, and that if the ledger balance of a customer is to be written off, part must be charged against the discount reserve and part against bad debt reserve.

Signs and Advertising

All breweries furnish to their customers, free of charge, signs carrying announcements of the names of the customers jointly with the advertisement of the product of the brewery. Such signs should be charged to expense, not carried as assets. It is obvious that nothing material could be realized on their sale if they could no longer be used in the place for which they were made.

Advertising may be a very large item of expense, some breweries having announcements in almost all the publications in the country. Such advertising, however, is principally of bottled liquor, and is primarily chargeable against the bottling accounts. Nevertheless, the advertisement of bottled liquor may be largely for the purpose of bringing before the public the general output of the brewery, in which case the division of expense between the bottling works and the brewery must be made in accordance with the circumstances.

Few breweries make any direct profit from bottling, and many admit that the maintenance of a bottling plant is justifiable only as an advertisement of the brewery.

The charges to this account originate in the voucher register.

Repairs to Saloon Fixtures

All repairs to saloon fixtures and plant, if not chargeable directly to the customer, should be immediately written off as expense. The repairs, consisting of new piping (ale and beer runs, drainage pipes, etc.), repairs to pumps and fixtures, ice-boxes, etc., are made by firms who maintain a special staff for that work. Very little repairing is done by brewery employees.

The charges to this account also originate in the voucher register.

Office Salaries and Expenses

This account includes the usual items which are met with in office expense accounts of other businesses. It takes up the salaries of all clerks, except the shipping clerks, the salary of the latter being charged against distributing expenses. The charges originate in the cash book and voucher register.

Brewers' Association Assessments

Brewers' associations, for the furtherance of the interests of brewers, exist throughout the United States, and are maintained by assessments of a fixed charge per barrel on the sales of their members.

Summary of Selling Accounts

Beer sold.—Sales books entered from delivery receipts, checked by cellar slips, amounts posted to customers' ledgers, totals credited monthly to Sales (general ledger).

Collections.—Reported by collectors on collection register sheets (Exhibit 15), posted therefrom or from receiving cash book to customers' accounts, monthly totals posted therefrom to credit of controlling account of customers' ledger.

Commission to collectors.—Credited monthly to collectors' accounts on basis of collections made; total charged to Selling Expense through journal; collectors' accounts debited from time to time with amounts advanced on account, balance due paid off at end of each month.

Expense accounts.—Those paid in cash posted directly

to the expense accounts from analysis of the Expense column in general cash book; other debits obtained from analysis of Expense column in voucher record, such expense accounts closed out monthly into Selling Expenses.

Discounts.—Actual amounts allowed on cash receipts charged to Discount Reserve; reserve adjusted monthly by charge to Discount Expense of a sum sufficient to leave the reserve with a credit balance equal to prospective requirements.

Returned beer.—Entered in separate column of sales books, posted therefrom to credit of customers' accounts, total posted monthly to debit of Sales account in general ledger. Do not deduct Barrelage Returned from Total Barrels Sold if the returned beer is not salable. The total sales must agree with total stamps used. Moreover, "returned" beer is frequently a device of saloon-keepers to charge to the brewery stale beer, and the amount credited by the brewery is practically a rebate.

Special allowances.—Any special allowances should be entered in a special allowance book, all entries to be initialed by the manager. The details are posted to credit of customers, the totals posted monthly to debit of Discount Reserve.

Cost of liquor sold.—A journal entry is made monthly, crediting liquor stock accounts and charging, respectively: Sales, Beer, City—Sales, Ale, City—Sales, Beer, Shipment —Sales, Ale, Shipment; these costs of liquor sold accounts remaining open until the end of the fiscal period, when they are closed out into the general trading account.

An additional journal entry is made, taking up the revenue stamps used on the beer sold.

In this connection it may be remarked that stamps must be affixed on shipment, even though the shipment be to an agency of the brewery and the beer be not sold; in such

cases the revenue stamps, as per revenue stamp book, will not show the same balance as the ledger account of stamps, the difference being the stamps affixed to unsold liquor at agencies. This offers no difficulty if the accountant, in making the agreement, allows $1 for each barrel of liquor held in stock away from the brewery.

CHAPTER V

DISTRIBUTING EXPENSES

The items included under distributing expenses are:

Wages, drivers, stablemen and shipping clerks
Repair of vehicles
Tolls, ferriage and sundries
Coopers and repairs to cooperage (not replacements)
Horse-feed and supplies and gasoline
Replacement of cooperage
Depreciation of horses and of auto-trucks

Each of the first four items should have a separate general ledger account, to be closed out at the end of each month by a charge to Distributing Expenses. Horse-Feed and Supplies is an inventory account, and the amount credited to it and debited to Distributing Expense should be the value of feed and supplies consumed during the month.

The cost of replacement (not repairs) of cooperage, which, as stated herein, may be 10-12ths of 1% per month, equivalent to 10% per annum, should be charged to Distributing Expenses, and credited either directly against the asset Floating Cooperage or to a reserve for depreciation, the credit to Cooperage account being left till the end of the fiscal period.

A similar charge to Distributing Expenses and credit

to the assets Horses and Auto-Trucks should be made monthly. The rate of depreciation on horses will vary widely with differing conditions of roads, etc., and there is not yet sufficient data at hand to show conclusively what rate of depreciation is necessary on auto-trucks. Probably a life of five years is the most that can be expected of the motor-trucks now on the market.

Care of Packages—Replacements

Unless customers are required to account strictly for empty packages, the loss thereon may be large. An account of empties should be kept in the pass-book of each customer, a duplicate account being kept at the brewery. From time to time the pass-books should be called in by the brewery and compared with the brewery books in this and other respects.

Empty beer kegs and barrels have many possibilities other than the containing of liquor. They make admirable tree-tubs; they have been used for mooring-buoys; and not a few have been used to celebrate sundry occasions by bonfires. Customers soon know whether they may safely neglect to return packages, and quickly adapt themselves to the requirements of the brewery.

It is impracticable to obtain a physical inventory of packages of a brewery in active operation. In Europe it is customary to number the individual packages and to keep a record for each, showing its whereabouts. This is not necessary if proper care be taken to collect empties. It has been found that where the drivers use proper diligence an annual depreciation of 10% of the ledger balance covering floating cooperage suffices to keep the balance approximately stationary at a figure equal to 33 cents per barrel of annual trade. That is to say, for a plant brewing 400,000 barrels per annum the book value of packages would be about

$133,333, and the annual cost of replacements (not including repairs) about $13,333.

This would indicate that the packages in use have a total capacity of 33,333 barrels, equal to one month's trade, which is probably very close to the truth. The figures are:

Cost of new packages:	½ barrel at.....	$3.50
	Fittings at.....	.50
		$4.00

33,333 barrels = 66,666 half barrels

New cost, $4 × 66,666.....	$266,664.00
Current value = ½ =.....	$133,332.00

Depreciation, $13,333 per year = 20 cents per ½ barrel per year, or 1½ cents cost of replacements for each time that the package is sent out.

About 80% of the trade is done in ½ barrels.

All this, in effect, indicates that the packages have an average active life of twenty years, going out and returning once every month.

To keep records in the European manner would entail the making for each package of 500 entries, on different dates; the saving, if any, resulting from this close accounting for packages could be only the additional life, over twenty years, which might be obtained for a package. Under American conditions, 500 book entries cannot be made for the value of a package twenty years old.

The figures given above for cost of replacement will not be changed, even though the view be taken that the packages in use are more or less than sufficient to contain

one month's supply. If, for example, it be estimated that packages sufficient to contain only two weeks' supply are in use, then the rate of depreciation sufficient to keep the asset stationary in amount will become 20% instead of 10%, but this rate of depreciation is computed on an asset only half as great as that contemplated in the figures given. In either case the depreciation would amount to $13,333 per annum.

So far as the profit and loss feature of the accounting is concerned, the vital fact is that a depreciation equivalent to 10% per annum on packages containing one month's supply, or 40% on packages containing one week's supply, will suffice, under good management, to keep the asset account stationary.

Under these circumstances, the cost of replacements per barrel of annual trade is very close to 3 cents, and as the trade is done principally in ½ barrels the cost will be 1½ cents per package for every time it is sent out. Obviously, if only two weeks' packages are in use, the number of times each package will be sent out in its life of ten years will be equal to the number of times it would be sent out in its life of twenty years, supposing packages sufficient to contain a month's supply were in use.

Summary of Distributing Expenses

Wages.—Charges obtained from distribution of pay-roll accounts, which may best be made through the cash book.

Repair of vehicles.—Charges obtained through voucher register. Cover actual current repairs.

Tolls, ferriage and sundries.—Charges obtained principally through petty cash book.

Coopers and cooperage supplies.—Coopers' wages charged from pay-roll distribution; supplies charged through

voucher register. This does not include replacements of cooperage.

Horse-feed, supplies, gasoline.—The charges to Distributing Expense are obtained by monthly journal entry, charging this account and crediting the corresponding inventory accounts with the month's consumption.

Replacement of cooperage.—Provided for by a monthly reserve, equivalent to either 3 cents per barrel of sales or to 10-12ths of 1% of the ledger balance. These rates are equivalent in the long run, but the asset account should be watched, and if it shows a tendency to grow in amount the provision for replacement should be increased. At the end of a fiscal period the reserve set up for this purpose should be written off against the asset. This refers to floating cooperage only.

Renewals and depreciation of horses and vehicles.—Provided for in the same manner as floating cooperage.

CHAPTER VI

ADMINISTRATIVE EXPENSES

Administrative expenses include salaries of president and directors and sometimes of treasurer and secretary, fees of directors, and cost of auditing.

If, in addition to their duties as officers, any of these perform in the brewery or in the office, duties which might be performed by ordinary salaried employees—duties connected directly with selling or manufacturing the product—a corresponding portion of their salaries should be charged against the selling and manufacturing accounts.

Elimination of Manufacturing and Selling Expenses

It should be so arranged that Administrative and Management Expense will include nothing that is directly a part of the cost of manufacture and sale. The practice of bringing into General and Administrative Expenses, expenses which are strictly dependent upon business done, such as salaries of clerks employed in keeping manufacturing and customers' accounts, is to be deprecated. The employment of an adequate office staff is intended to secure economy in the operation of the plant; its cost should be charged directly against operations, so that comparison may be made to see whether it pays to carry accounting into minute detail. Neglect to charge directly against operations the office salaries and expenses may be responsible for the failure of breweries to recognize the lack of economy in keeping

separate records by number of each package, as described herein, as it assuredly has been responsible for the adoption by many factories of elaborate but unpractical cost systems, most of which fail to take into account the cost of the system itself.

Entry of Expenses

An accurate estimate of the annual cost of administrative expenses can be made, and a monthly charge to Administrative Expense, with a corresponding credit for Reserve for Directors' and Officers' Salaries and Fees, should be made. There will then remain at the end of each month on the latter account a credit balance representing accrued fees and salaries.

It may appear that the provision by journal entry for accrued and accruing discounts, depreciation, taxes, insurance, etc., and the monthly journalizing of sales, stamps used, liquor removed from stock, and the transfers of items of expense to general manufacturing, selling and distributing expense, entails much work. This is not found to be so; the entries are similar each month, some identical in amount (taxes, insurance, provision for depreciation, etc.), and the remainder changing only in the figures, not in the form. It may be found economical to prepare a number of forms in blank, taking up the entries which should be made each month and filling in the details as required. These forms may even be printed, and after filling may be posted directly and placed in a binder for reference, without entry in the journal. This has been done without any objection appearing, and the preparation in advance of a form containing all the regular monthly transfers will go far to prevent the accidental omission of entries.

CHAPTER VII

COUNTRY BREWERIES

Conditions of Country Trade

In ordinary city trade it is undesirable that customers should be allowed to know what other customers purchase; it is therefore necessary that each of the drivers' slips should contain information as to the beer to be delivered to only one customer. City deliverymen are not allowed to collect cash, and, as stated previously, the city trade is dependent largely upon the personal relations between customers and collectors.

It is possible, in country trade, to adopt other and much more economical methods, especially where the trade is controlled by ownership of saloons or otherwise. Customers are more widely separated, and have not the same close rivalry; competition is less keen, and delivery drivers are able to take care of collections and to take orders for supplies.

Deliveryman's Report

In such cases a form similar to Exhibit 16 may be used. On this form is first entered the liquor to be delivered during the day by one driver; each customer signs in the proper place for the beer received by him; the driver enters on the sheet the amount of cash collected and the number

of empties returned. On returning it to the brewery office the money amount of sales is filled in and the form placed in a binder, where it forms a cash receiving book from which are posted the cash credits to customers, and a sales book from which are posted debits to customers. The totals of these sheets are summarized at the end of the month and posted to the proper general ledger accounts.

Where saloons are so thoroughly controlled that this sheet can be used and the services of salesmen and collectors dispensed with, the saving of expense may amount to 60 cents per barrel.

CHAPTER VIII

MONTHLY REPORT OF OPERATIONS

Forms Used

In Chapter XV are shown three forms (18*a*, 18*b* and 18*c*) suitable, respectively, for breweries (*a*) whose product is either of one kind only, or of qualities so nearly alike that no separation of costs is needed, and whose out-of-town trade is so small that it may be merged with the general trade; (*b*) whose costs and sales of beer and ale are to be separated; (*c*) whose costs and sales are to be separated, not only as between ale and beer, but as between shipment and city trade.

These reports are so prepared as to show at a glance the general results of trading; the details of expenses and costs being given on supplementary schedules. This form is much more acceptable and intelligible to directors than statements in which the general results of trading are lost in a mass of detail; yet the supplementary schedules show with a minuteness not practicable in a single statement the details of expenses.

In every case the principal accounts and schedules should have parallel columns for corresponding figures of other periods; these are not shown on the exhibits, but their arrangement will be obvious.

In order to secure sufficient details without burdening the voucher register with unnecessary columns and the general ledger with many accounts, it is desirable that sub-

divisions of certain accounts be indicated by letter; thus, in the Steam and Power account the items in the voucher register may be distinguished by letters "a," "b," "c," etc. The total of the Steam and Power column in the voucher register may appear thus:

Total,	$8,261.00	
a	$4,100.00	All being posted under their
b	2,620.00	respective letters to Steam
c	672.00	and Power account in the
d	869.00	ledger.

CHAPTER IX

BOTTLING ACCOUNTS

Treatment of Bottling Accounts

Sales of bottled beer and ale are seldom made at a profit if the liquor be charged to the bottling department at ordinary selling prices. Except as an advertisement, most bottling plants are financial failures.

There seems to be no advantage whatever in conducting the bottling books as part of the accounts of a brewery; the disadvantages are many. Thus, customers' accounts are small and numerous; the sales, deliveries and collections are differently conducted; the personnel is entirely separate; and instances in which a customer buys both bottled and bulk goods of one make are rare indeed. The books of a bottling plant have more of the character belonging to a retail business, and to handle the mass of petty detail which occurs in bottle trade in the manner found suitable for the business of a brewery would be a serious waste of effort.

For all these reasons it has proved more economical for breweries to charge beer to bottling works in the same manner as to an outside customer, and for the bottling works to keep its own accounts, make its own collections, and prepare a separate trading and profit and loss account.

CHAPTER X

ASSETS—PLANT AND EQUIPMENT

Buildings, Brewery

The valuation of these does not offer any features differing from those obtaining in other lines of business. The rate of depreciation to be written off will vary according to locality and class of construction; some idea of the rate necessary may be gathered from an inspection of brewery buildings that have been operating under similar conditions. Many brewery structures, if of brick, steel and cement, will continue in use for fifty years.

Outside Property

Outside real estate, which will be principally saloon property, should be taken up at cost, less a rate of depreciation somewhat greater than that necessary to amortize the value of the building over the period of its probable life. Most saloon properties have a value due in part to their suitability for this particular use. Changes in legislation and movements of population, etc., are likely to affect adversely such properties, and the depreciation should aim at eventually reducing the book value to the figure at which the property could be sold for other purposes.

Machinery and Permanent Plant (Not Buildings)

Under this head may be included "chip casks" and other large fixed cooperage, tanks, and the usual brewing machinery, as well as boilers, engines and electric plant. It

does not include floating cooperage, wagons, horses, auto-trucks, nor saloon fittings.

The asset should not largely exceed, for each barrel of annual output, $1.50. If a plant be used principally for the production of ales this figure is too high, because a much larger quantity of ale may be produced in a given time than of lager beer. If the brewery be not operated to its fair capacity, this figure must be applied not to the actual output but to the normal capacity. Five per cent annual depreciation on the original cost is sufficient, if usual repairs are made and charged to expense as incurred.

Floating Cooperage

The packages in use, as already stated,* should have a capacity of about one month's sales if the brewery be engaged principally in trade in the city where the plant is located. The book value should be one-half of the new cost of this quantity of packages. As new packages are constantly being purchased to replace worn-out packages, the whole stock, on the average, will be half worn out.

A brewery may own more packages than it needs, but idle packages deteriorate and tie up capital, and for these reasons the packages are kept as low as possible.

If a brewery claims a value for its packages largely in excess of half the new cost of packages, with a capacity of one month's sales, the auditor should not accept the figures without careful verification.

*See Chapter V.

CHAPTER XI

ASSETS—INVENTORY AND SALOON FITTINGS

Inventory, Liquor and Materials

The materials on hand, being kept in original packages, may easily be verified by physical examination.

The liquor on hand must be estimated to some extent, as part of the stock will be in tanks and vats. The auditor should not fail to compare the sales and stock of liquor on hand with the records in the internal revenue stamp book. Government inspectors check up the amount of stamps purchased and used, their figures being obtained from the records of stamps sold at the internal revenue office of the district; there should not be any difference whatever between the records of the government inspector and the brewery figures of liquor brewed and shipped.

Although the revenue stamps are not of marketable value they should be counted, not to prevent stealing of stamps, but to see that no stamped beer has been sent out without a proper record appearing on the books. The stamps on hand should agree with the balance of the internal revenue stamp book.*

Saloon Fittings

This asset is liable to much inflation. When fittings are purchased their value should be debited to the customer's loan account, and in addition chattel mortgages and notes of customers should be taken as collateral security. If this

*But see page 38.

be done, the amount spent on fixtures will not be overlooked in computing the amount of loan allowed to individual customers.

Some breweries, however, carry the fittings themselves as the asset, ignoring the collateral security, and not recognizing the debt by the customer on account of the fittings supplied to him. In such cases the asset cannot in any way be verified, or even roughly estimated, by the auditor. In making an analysis of the account the auditor may, however, furnish to the brewery officials an approximate statement of the value at which each customer's fittings are carried, and with a little tact the brewery owners may obtain some idea of the real value of the fittings. Where this has not been done for some years, it will generally be found that fixtures which are still carried on the books have long ago found their way to the junk heap.

If, however, the fittings be charged at once to the customer, and the debt treated as a loan account, there will exist a lien on the business which will be recognized by brewers who desire to obtain the trade; and if notes covering the loan have been obtained the lien becomes a legal obligation of the customer.

If the fittings be taken as the property of the brewery, a customer desiring to make a change to another brewery need only turn over to the first brewery the fittings, which when torn out are valueless, obtaining from the new brewery new fittings.

On the whole, it is most satisfactory to include in brewery assets no fittings except those on hand at the brewery.

CHAPTER XII

ASSETS—CUSTOMERS' ACCOUNTS

Lager Beer Accounts

In accordance with the custom of the trade, lager beer accounts should be paid promptly, and statements should be sent weekly to customers. Circularization of the customers by auditors is not practicable, because the customers are usually so ignorant of modern business methods that serious offense is taken if inquiries be addressed to them relative to their debts.

In dealing with customers of a brewery, auditors should recognize that the relations of breweries with their customers are of a peculiarly personal nature, and, as already stated, that the trade is held largely through the personal influence of the collectors with whom the customers come in contact.

Ale Accounts

Ale accounts are paid less promptly than lager beer accounts. The liquor is put up in larger packages, has a slower sale, will keep longer, and the custom of the trade is to allow longer credit. For this reason, customers who have both beer and ale trade should be given separate ledger accounts for each. Indeed, it is preferable to have separate customers ledgers for ale and lager beer sales.

Customers' Loan Accounts

Customers' loan accounts are of two kinds: those cover-

ing general loans for the purchase of fixtures, etc., and loans for the purchase of licenses.

The managers of breweries should have personal charge of the loans for general purposes, and should authorize all new loans, receive all repayments on account of such loans, and ascertain that proper discount or other provision is made for the ultimate extinction of the amounts loaned.

License moneys, however, are collected weekly by the same collectors who collect for beer, and where license and general loans are merged in one account it is not easy to prevent collectors from appropriating license moneys.

License loans should never, under any circumstances, be allowed to fall seriously into arrear. In order to ascertain that all license installments are promptly paid, the ledger in which these are entered should be separated from the general loan ledger, and may with advantage have a form similar to Exhibit 9.

It has been stated before that the discount to be allowed to customers, which really fixes the selling prices, should be determined by the manager and made the subject of a permanent record.

Verification of Prices

At the close of a fiscal period the customers' ledger should be examined to ascertain that the average net price actually paid by the customer is in accordance with the price fixed by the manager.* This net price should be computed by dividing the actual cash received, less the amount of credit transferred from the liquor account to the loan account, by the number of barrels paid for. This will include, as deductions from net selling price, all discounts applicable to loan account, all allowances made by collectors, and all returned beer. Experience shows that in a well-

*See page 25.

managed brewery this check on prices will indicate with certainty any extra allowances amounting to as much as 1% of the sales, and thus show any fraud arising from improper entries of credit for discount or allowances.

Verification of Loans

The verification of general loans offers much difficulty. The loan as shown on the books seldom agrees with the figures of the customer (if he takes the trouble to keep any) because it is customary for breweries to apply against the loans, without the knowledge of the customer, extra discount and allowances. The loans are also reduced from time to time by writing off a part to bad debts. In such cases the customer is not informed, because if any change were made in the relations of the customer with the brewery it would be of advantage to have a lien for as large an amount as possible. It follows that statements of the loan accounts cannot be sent out for verification.

The auditor can see (1) that new loans are duly authorized, (2) that the total of each individual customer's account does not exceed $4 to $4.50 per barrel of annual trade, and (3) that individual loans are not gradually increasing. He can also see that agreements to pay off loans in a specified manner (such agreements sometimes exist) are being carried out.

Where a brewery has operated for a considerable time, a most valuable check will be found in a comparison of the total outstanding loans with the barrelage for each year. A similar comparison of the total of outstanding beer accounts should also be made. Even without intentional falsification of accounts, the value of loans may become largely overstated by failure to make proper provision for partial uncollectability of loans made to customers who continue in business and make their payments of beer ac-

counts promptly. Led by desire to make as good a showing as possible, managers are often reluctant to write off any part of such accounts at the expense of current profits.

It being understood that these accounts will never be fully repaid in cash, and that they are of value principally as a means of holding trade, it is obvious that the amount of trade done should bear a proper ratio to the amount of loan.

Collateral for Loans

Examination of chattel mortgages given as collateral for loans, and of the notes given for the same purpose, is of little value to the auditor. Even when saloon-keepers pay their notes and chattel mortgages in full, they frequently omit to see that the documents are returned to them or canceled, and where a part of a loan is repaid or canceled by charge to bad debts or application of discount, it is seldom that the customer ascertains that proper indorsement is made on the notes. Breweries usually have on hand notes and chattel mortgages to an amount largely in excess of the book total of loans outstanding.

CHAPTER XIII

ASSETS—BILLS RECEIVABLE AND CASH ON HAND

Bills Receivable

In most breweries the notes given by customers, both on account of loans and current liquor accounts, are treated as collateral only, not credited to customers nor taken up as bills receivable.

This seems a proper course, since saloon-keepers give notes without any serious intention of paying them at maturity. If, however, any bills receivable be carried among the assets of a brewery, the auditor should ascertain that they are given for beer accounts and not as security for loans; that they are not overdue; and, if demand notes, that they have not been in existence for an unreasonable length of time. If possible, the auditor should follow them to their final disposition.

The total amount should be small; in no case within the records available to the writer has the total of notes receivable, given with the full intention of payment at maturity, been greater than 1% of the total outstanding indebtedness of the brewery's customers. On the other hand, notes given as security for loans, apparently regular, which would have been accepted by a careful auditor in any other business, but which are quite valueless except as liens to be used in case of transfer of the customer's business, have often been met with among the "Notes Receivable" carried as part of the brewery assets.

Cash on Hand

Such cash as is deposited in the bank may be verified in the same way as in any other business. It is not possible, however, to see that all moneys received are promptly deposited in the bank, because breweries accept many postdated checks, and also, at the request of customers, hold other checks until the customer has sufficient funds to meet them.

This practice of giving postdated checks has given rise to another practice which is even more dangerous to the auditor. When postdated checks are given, the amounts may be entered in the cash book as receipts; frequently at maturity the customer pays part of the check, giving for the balance a new check, still further postdated. In such cases the customers do not always ask for the old check, but leave it in the hands of the brewery cashier, to be destroyed. It thus happens that checks entered in the cash book which appear to be good, but which ought to have been destroyed, are still in existence.

The auditor should make his verification after all the available checks have been deposited, and if necessary he should make two counts of cash, so as to give the cashier an opportunity to deposit all available moneys. After doing this the remaining checks, which may be either ante- or postdated, should be given a careful scrutiny, and if possible should be approved by the manager.

In addition to obtaining the manager's approval of such checks, it is further desirable to follow them to their final disposition, and, as in no case should a check be held for more than ten days, the auditor may, without unreasonable delay, follow up any checks of which he is suspicious.

Part II—Forms

CHAPTER XIV

NOTES ON FORMS

1. Journal

The number of columns required will vary with the number of divisions into which the selling profits are to be separated, and the consequent number of customers' ledgers. If ledgers be kept separately for city trade in ale and in beer, and for shipment trade in ale and beer respectively, four columns for customers' ledgers would be needed. Customers' loan ledger will need a column, as the transfers from liquor accounts to loan accounts are numerous. No column is needed for the license ledger, the few transfers being entered in the sundries column.

2. Voucher Record

It is intended that the items in certain columns shall be subdivided in the monthly total, although all the subdivisions are to be posted to one account. Thus, Steam and Power account should be subdivided into its principal components, as shown herein under the heading "Monthly Reports of Operations."

3–4. Sales Books

It will be noted that no provision whatever has been made for the separate recording of city and shipment trade

or of ale and beer trade on one sales book. It is more convenient to keep separate sales books for each subdivision of selling accounts that the brewery maintains. Form 3 is suitable for city ale trade. Form 4 is suitable for shipment trade, in that it records liquor shipped but not sold, and also sales from stock so shipped prior to sale.

5. Ledger and Sales Book Combined (City Lager Beer Trade)

This book is so prepared that the daily deliveries are entered only as to quantities, the money charges being made weekly. The leaf carrying the names of customers is longer than the remaining leaves, the best practice being to make up the book so that each long leaf is succeeded by fifteen short ones, in order that the names of customers need be written in but once in three months.

Where this ledger is used the trial balance may be obtained with promptness.

6. Ale Ledger

Shipment ledgers are similar in form to the ale ledgers. The only difference between these and standard form ledgers is found in the fact that columns are provided for recording packages received and returned.

7. Receiving Cash Book

The number of columns is limited by the number of ledgers kept.

8. Payments Cash Book

This is self-explanatory.

9. License Ledger

The cost of the license, when purchased, is posted to this ledger from the cash book, and forms the debit side

of the ledger, column 1. Repayments are entered as shown, the total of the month's repayments being extended for each customer. The footings of all the monthly repayment totals form the credit side of the ledger. An account in arrears is seen on casual inspection.

10–11. Tables of Materials and Composition

No explanation required.

12. Report of Manufacturing Cost

Self-explanatory.

13a-b. Cellar Slips

Self-explanatory.

14. Delivery Receipts

These are forms bound in books, in duplicate, for use with carbon. Alternate leaves are perforated at "A" and "B," the upper portion of the detached leaf being returned to the brewery by the deliveryman and forming the basis for entries in the sales books; and the lower portion, which is a receipt for empties, being signed by the deliveryman and given to the customer.

15. Collection Register

Self-explanatory.

16. Deliveryman's Report of Liquor Delivered and Cash Collected

This is principally used for controlled trade, and on completion is used as a combination sales book and cash receipt book. Where used as a daily cash receipt book the

daily totals are copied out into a bound cash book, in which are also entered receipts other than for customers' accounts.

Sales are posted from these sheets to customers' accounts, the daily totals being summarized and posted to the general ledger controlling accounts at the end of each month.

As the deliveryman handling city trade will not on the same day also handle shipment trade, separate columns for city and shipment trade are unnecessary. The form given is suitable for a brewery where city and shipment trade are separated, but not ale and beer trade. If this further separation be required it can best be carried out by separate delivery sheets for ale and lager beer, not by adding more columns to this form.

The entries showing the quantities delivered are made in the brewery office before the liquor is sent out; the entries of cash receipts and returned empties are made by the deliveryman; the customer receipts for the liquor supplied; and on return to the brewery office the cash amount of the sales is extended.

17. Summary of Costs

Self-explanatory.

18a–b–c. Reports of Operations

Exhibit 18*a* is suitable for a brewery which produces either only one class of product or does not care to distinguish between differing classes of liquor, and that has not sufficient shipment trade to make a separation desirable. Exhibit 18*b* is suitable for a brewery separating costs and sales of ale from costs and sales of beer. Exhibit 18*c* is suitable for accounts separating sales and costs as between city and shipment, and as between ale and beer sales for each.

An examination of these exhibits will furnish all the

information necessary to prepare suitable statement forms for any desired division of sales and costs.

19a–b. Supplementary Schedules

The Reports of Operations are so prepared as to show general results at a glance. The details of expenses and costs are reserved for supplementary schedules. This arrangement gives a much clearer presentation both of general results and of details than can be obtained from statements in which the general results are obscured by a mass of detail. Also the supplementary schedules show the details of expenses with a minuteness not feasible when a single statement is employed. As already stated, both the principal accounts and the schedules should have parallel columns for corresponding figures of other periods. These columns are not shown on the exhibits, but the general arrangement is obvious.

CHAPTER XV

ILLUSTRATIVE FORMS

The forms shown in this chapter have been reduced in size to meet the requirements of page space. It should, of course, be understood that in preparing them for actual use they must be made large enough to be practical and convenient. This is especially true of those forms used by drivers, collectors and shipping clerks, which should always be of ample size, so that employees who are comparatively uneducated and unfamiliar with bookkeeping may use them without difficulty.

The combined sales book and ledger shown in Exhibit 5—the entries in which are often very hastily written—is always made of rather large size, the width of the first leaf being about eleven inches, so as to allow sufficient room at the left for the names of customers. Next following this come such number of shorter leaves as may be convenient, these leaves being made of lesser width so as to leave the names on the left-hand page visible, thus avoiding the necessity of copying these names each time a new page is turned. It will be found convenient to let about fifteen of the shorter leaves follow each long leaf.

To hold and preserve the reports of manufacturing cost and the statements of monthly profits and losses, a loose-leaf binder may be used to advantage.

Exhibit 1. General Journal

Beer Ledger		Ale Ledger		Loan Ledger		Gen. Ledger		L.F.					L.F.	Gen. Ledger		Loan Ledger		Ale Ledger		Beer Ledger	

(See page 61.)

Exhibit 2. Voucher Register

DATE PAID			VOU. NO.	AMOUNT	CHARGES TO LOAN ¼	L.F.	DETAILS	MATERIALS L.F.	MFG. EXPENSE	SELLING EXPENSE	DISTRIB. EXPENSE	OFFICE EXPENSE	FREIGHT ON SALES	CHARGES TO CUSTOMERS		GENERAL LEDGER L.F.	REMARKS
Oct 14	Aug 31	Smith Showcase Co	122	260	100	216	I Sanghorty - New Bar										
✓		✓			60	225	C. Canfield - Pier Glass			100							
	-	N.Y. N.H. & H.R.R.	123	83 24			Freight 10 Inter Tops	42					41 24				
	-	Western Malt Co.	124	1860			1000 Bushels Malt	1860									
	-	Atlas Chalmers Co.	125	260			Dinkey Engine									260	
Aug 31	-	Pay Roll	126	2115			Work Ended Aug 30		430	1100	463	120					

(See page 61.)

Exhibit 3. Ale Sales Book

ALE SALES BOOK																						
RETURNED LIQUOR						RETURNED EMPTIES				CUSTOMER	SALES											
											ALE				PORTER							
		C	B	½	¼	C	B	½	¼		C	B	½	¼	C	B	½	¼				

(See pages 18, 61, 62.)

Exhibit 4. Sales Book

TRENTON DEPOT SALES

1912	SHIPMENTS C	SHIPMENTS B	SHIPMENTS 1/2	SHIPMENTS 1/4	SALES C	SALES B	SALES 1/2	SALES 1/4		SALES AMOUNT	RETURNED PKGS. C	RETURNED PKGS. B	RETURNED PKGS. 1/2	RETURNED PKGS. 1/4	RETURNED BEER-AMT.
July 1	2	10	10	4					Depot (a)			4	22		
4			6				6		McClellan, Jas. (b)	24				1	2
13							10		Wilson, W. (c)	40					
Total	2	10	16	4			16								
Bro't Down			16												
Stock	2	10		4					Balance at Depot						

(a) Shipment to Depot Stock - Not Sold
(b) Sale, Shipped Direct
(c) Sale, from Depot Stock

(See pages, 18, 61, 62.)

Exhibit 5. Ledger and Sales Book Combined (City Lager Beer Trade)

NAMES	DELIVERIES																		SALES				BEER RETURNED			AMT. OF RETURNS		
	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY			SATURDAY			BARRELS			AMOUNT						
	½	¼	⅛	½	¼	⅛	½	¼	⅛	½	¼	⅛	½	¼	⅛	½	¼	⅛	½	¼	⅛		½	¼	⅛			

Left-hand leaf (long)

	Balance Last Week	TOTAL	Date	Cash Paid	Discount	Extra Allowances	Balance	Folio	Remarks

Right-hand leaves (short)

(See pages 5, 28, 66.)

Exhibit 6. Ale Ledger

ALE LEDGER																					
			Dr.		PACKAGES DELIVERED				PACKAGES RETURNED									Cr.	
					C	B	½	¼	C	B	½	¼							

(See page 62.)

Exhibit 7. Cash Book—Receipts

	(1)			(2)			(3)			(4)			(5)		
CUSTOMER	ALE LEDGER			BEER LEDGER			LOAN LEDGER			LICENSE LEDGER			GENERAL LEDGER RENTALS, Etc.			COLLECTOR'S EXPENSES		
		AMOUNT	DISCOUNT		AMOUNT	DISCOUNT												
	L.F.			L.F.			L.F.			L.F.			L.F.					

Column (1) Details posted to customers' ledgers; totals to general ledger.
(2) Details posted to customers' ledgers; totals to general ledger.
(3) Details posted to loan and license ledger; totals to general ledger.
(4) Items include rentals, sale of empty hop sacks, etc.
(5) Expenses deducted from collections. At end of month the total of this column transferred to payments cash book.

(See page 62.)

Exhibit 8. Cash Book—Payments

			VOU. NO.	AUDITED VOUCHERS		LOAN AND LICENSE LEDGERS			CUSTOMER'S LEDGERS		COLLECTION & SELLING EXPENSE		GENERAL LEDGER		
						L.F.									

Exhibit 9. License Ledger

AMOUNT OF LICENSE			OCT.				NOV.				DEC.				JAN.				FEB.				AUG.				SEPT.			
			DAY	AMT. PAID			DAY	AMT. PAID			DAY	AMT. PAID			DAY	AMT. PAID			DAY	AMT. PAI			DAY	AMT. PAID			DAY	AMT. PAID		
		1912.	7	25	1		4	25																						
			14	25	1		11	25																						
			21	25	1		18	25																						
1200		Oct. 1 Month	28	25	1	100	25	25		100																				

Exhibit 10. Comparative Brewing Value of Materials Used

EQUIVALENT WEIGHTS				
Starch (2).....	C_6	H_{10}	O_5	= 324
Dextrin	C_{12}	H_{20}	O_{10}	= 324
Maltose	C_{12}	H_{22}	O_{11}	= 342
Glucose sugar..... Dextrose, lævulose, etc. (2).....	C_6	H_{12}	O_6	= 360
Alcohol ethylic (4)	C_2	H_5OH		= 184
Cane sugar.....	C_{12}	H_{22}	O_{11}	= 342

Values (pure glucose = 1.00)

These weights represent the weight of one product which may be obtained from another; 324 lbs. starch may be converted to 342 lbs. maltose, 360 lbs. glucose or 184 lbs. alcohol, water being taken up, and, in producing alcohol, CO_2 liberated. Glucose, therefore, gives 184/360 of its weight of alcohol, or 51.1%.

Malt (barley) gives 66% extract, of which 61% is maltose, with a little dextrin; its glucose value is

$$\frac{61 \times 360}{342} = 64\%$$

Malt (wheat). Wheat contains (66.1% Graham, 69% Church) of starch, dextrin and glucose. Part of the moisture of wheat is lost in malting, and more is taken up by the starch in conversion to maltose. The content of wheat malt in maltose and its congeners may be taken safely at 70%, of which perhaps 65% may be available. Its brewing value is

$$\frac{65 \times 360}{342} = 68.3\%$$

Meal (corn) contains 55% starch, 52% being available; its value is

$$\frac{52 \times 360}{342} = 58\%$$

Rice flakes, or cerealin, contains 79% starch, 70% being available; value

$$\frac{70 \times 360}{324} = 78\%$$

Cane sugar. 95% is available; 5% of such grades as are used for brewing being water and impurities; value

$$\frac{95 \times 360}{342} = 100\%$$

Sugar (glucose), Corn Products Refining Co., is glucose containing water, the so-called "sugar" containing 70% of real glucose and the "syrup" 60%. Their values are, obviously, 70% and 60%, respectively.

Other cereals. The average content of other cereals is as follows:

	Per cent starch	Total equivalent glucose
Wheat (unmalted)	67	74.4
Rye "	66	73.3
Rice "	78	86.6
Oats "	62	68.9
Corn "	55	61.6

In brewing with unmalted cereals, about 10% of the total glucose is left behind in the brewers' grains, so that the brewing value of the above is about nine-tenths of the figure expressing total equivalent in glucose.

(See pages 12-14.)

Exhibit 11. Composition of Various Typical Grades of Malt Liquors

	Percentage		Total glucose needed to furnish alcohol, plus unfermented glucose	
	Unfermented glucose	Alcohol	Per cent	Lbs. per American barrel
ENGLISH ALE:				
Burton, mild	6.23	6.78	19.53	51.2
Burton, pale	4.56	5.37	15.09	39.5
Burton, bitter	4.56	5.44	15.20	39.8
Mild X	4.03	4.60	13.05	34.2
Mild XXX	5.27	6.50	18.01	47.2
Bitter beer	1.71	4.69	10.73	28.2
Old ale (Somersetshire)	4.34	6.50	17.08	44.7
Scotch bitter	4.45	5.00	14.25	37.3
Dublin Stout XXX	7.90	6.78	21.20	55.5
Dublin Stout XX	7.00	5.50	17.80	46.6
GERMAN LAGER:				
Vienna	4.74	4.69	13.94	36.5
Pilsen	3.64	3.29	10.09	26.4
Munich	5.11	4.75	14.41	37.7
Tivolo	4.20	5.31	14.60	38.2
Bohemian	2.85	3.81	10.32	27.0
Bavarian	4.50	4.14	12.61	33.0

Calculated from analyses by C. Graham (Society of Chemical Industry). For convenience of comparison, dextrin and maltose shown in the original analysis have been calculated to glucose by the author.

(See pages 12-14.)

The following analyses, by the chemists named, gave as "extract" the total unfermented carbohydrates, etc. For this reason the glucose is partly estimated.

	Percentage of Alcohol	"Extract"	Glucose per American barrel	Authority
Pilsen beer.....	3.55	5.15	29.8	Kohlrausch
Hanoverian (20 samples).....	4.01	6.34	35.5	Scalweit
English public house (61 samples)....	5.00	4.89	35.0	Carter Bell
Bass' pale ale.....	6.25	6.98	47.0	Lawrence & Reilly
Allsop's pale ale....	6.37	4.44	42.0	Lawrence & Reilly
Barclay & Perkins' porter.....	5.40	6.00	42.	Kayser
American lager (19 samples).....	2.88	6.05	29.5	Engelhart

Since these analyses were made the increased price of malt has led American brewers to carry further the attenuation of the wort, and American beer now averages higher in alcohol and lower in extract than the above figures.

Exhibit 12. Periodical Report of Manufacturing Cost

(Comparative figures for other periods may be added in parallel columns.)

REPORT OF MANUFACTURING COST FOR — MONTHS ENDED

———, 1913

Barrels brewed ———

Quantity per barrel		Cost per barrel, cents	Amount	
MATERIALS:				
*Malt	lbs.			
*Hops	lbs.			
*Sugar (glucose)	lbs.			
*Meal	lbs.			
*Flakes	lbs.			
*Other cereals	lbs.			
*Water and sundries				

*These items represent the month's consumption, credited to the respective inventory accounts and charged against Manufacturing account.

EXPENSES:			
*Labor			
*Refrigeration			
*Steam and power			
†Depreciation reserved			
†Taxes			
*Supplies			
*Sundry expenses			
Total			
Less grains recovered			
Cost of liquor, charged to Liquor Stock account			

*Each of these items represents the total of a general ledger account closed out monthly to Manufacturing account.

†Monthly provisions, credited to reserves for Taxes and for Depreciation.

(See pages 17-19.)

Exhibit 13a. Cellar Slip—Lager Beer

LAGER CELLAR TICKET

.....Driver 191

Quality	Bbl.	½	¼
LAGER.....			
DARK.....			
BOCK.....			

Received in good order

.....Driver

(See page 27.)

Exhibit 13b. Cellar Slip—Ale

ALE CELLAR TICKET

_____

	Casks	Bbls.	½	¼
BRAND				
X X				
STILL				
CANADA MALT				
STOCK				
EAST INDIA P.				
PORTER				
STOUT				
TOTAL				

Received in good condition

.....Driver

(See page 27.)

Exhibit 14. Delivery Receipts

A

- -

....., 191

Name _____

Address _____

Received from Tri-City Brewery, stamped, and stamps duly canceled:

Casks	Bbls.	½	¼	
				Cream ale
				Still ale
				Porter
				Stock ale
				Stout

Bbls.	½	¼		
				Lager beer

Returned

Casks	Bbls.	½	¼	
				Empty
				Part full

B

- -

Received by Tri-City Brewery

From.....

Casks	Bbls.	½	¼	
				Empty
				Part full

Date.....

.....

Driver

(See pages 27, 63.)

Exhibit 15. Collection Register

COLLECTIONS & EXPENSES ..... 191.... BY .....

LOAN COLLECTIONS				L.F	CUSTOMER	L.F	COLLECTIONS-ALE				COLLECTIONS-BEER				EXTRA		COLLECTION		
Loan		License					Cash		Discount		Cash		Discount		ALLOWANCE		EXPENSE		
		25			Albany Inn		430	80	76	50					6	00			
40					" "						400		240				12		

(See page 31.)

Exhibit 16. Deliveryman's Report of Liquor Delivered and Cash Collected

DELIVERED BY ....191...

PAYMENTS				L.F.	CUSTOMER	DELIVERED								RECEIVED IN GOOD ORDER (Customer's Signature)	L.F.	AMOUNT (For Office Use Only)		RETURNED EMPTIES			
CASH		DISCOUNT				Ale				Lager Beer											
						C	B	1/2	1/4	C	B	1/2	1/4					C	B	1/2	1/4
24		2			J. Gardner		1		2					Jno Gardner					2		
40		8			" "							4	4	Jno Gardner						6	3

(See pages 46, 47, 63, 64.)

Exhibit 17. Summary of Costs

SUMMARY OF AVERAGE COSTS PER BARREL IN TYPICAL WELL-MANAGED BREWERIES, CAPACITY 150,000 TO 400,000 BARRELS ANNUALLY

	Cents per barrel	
	Low	High
MATERIALS:		
Malt, glucose, flakes, meal, sugar	80	145
Hops	8	19
Water	2	4
Sundry materials	1	1
MANUFACTURING COST:		
Labor, brewmaster, kettlemen, etc., up to but not including rackers, not including refrigeration and power	14	22
Fuel	6	9
Refrigeration expense, not including fuel	6	10
Depreciation of plant, not including floating cooperage nor horses and wagons	7	8
Repairs (not renewals)	3	3
Light, insurance and taxes	6	10
SELLING EXPENSES:		
Collectors' salaries and exp.	30	36
" " " " (controlled trade)	9	
Bad debts (uncontrolled trade)	26	41
" " (controlled trade)	10	16
Miscellaneous	20	26
DISTRIBUTING EXPENSES:		
Repairs to packages, coopers' wages and mat'ls	8	9
Horse and stable (horse delivery)	20	26
Drivers' wages, ferries, tolls, etc., and wagon rep.	28	31
Delivery by auto-truck—not sufficient experience has been had to afford reliable data. The cost is largely made up of repairs to autos and damage expenses to other property and persons		
Replacement of floating cooperage	3	3

(See pages 33, 34.)

Exhibit 18a. Report of Operations

TRI-CITY BREWERY

TRADING AND PROFIT AND LOSS ACCOUNT FOR ——— MONTHS ENDED ———

Barrels sold	Per barrel	Amount	
Sales, less returns			
Discounts, allowances and freight			
Net sales			
Cost of liquor			
Revenue stamps			
Selling expenses (per schedule)			
Distributing " " "			
Administrative " " "			
Total cost of sales			
Brewery profit			
Other income:			
Bottling dept., profit or loss			
Rentals			
Miscellaneous			
Total net profit			

(See pages 29, 30, 48, 64, 65.)

Exhibit 18b. Report of Operations

TRI-CITY BREWERY

TRADING AND PROFIT AND LOSS ACCOUNT FOR ——— MONTHS ENDED ———

	Ale			Lager beer		
	Per bbl.	Amount		Per bbl.	Amount	
Sales less returns						
Disc'nts, allow. and freight						
Net sales						
Cost of liquor						
Revenue stamps						
Selling exp. (per schedule)						
Distrib. " " "						
Admin. " " "						
Total cost of sales						
Brewery profit						
Brewery profit brought down						
Ale						
Beer						
Other income:						
Rentals						
Bottling department						
Miscellaneous						
Total net profit						

Exhibit 18c. Report of Operations

TRI-CITY BREWERY

PROFIT AND LOSS ACCOUNT FOR —— MONTHS ENDED ——

	City Trade						Agency and Shipment Trade					
	Ale—Barrels			Beer—Barrels			Ale—Barrels			Beer—Barrels		
	Per bbl.	Amount		Per bbl.	Amount		Per bbl.	Amount		Per bbl.	Amount	
Sales, less returns												
Discounts, and freight on shipments												
Net sales												
Cost of liquor												
Revenue stamps												
Expenses, directly allocated:												
Selling												
Distributing												
Expenses, applicable to entire trade, distributed on barrelage:												
Selling												
Distributing												
Administrative												
Total												
Brewery profit												

Brewery profit brought down:			
City ale			
City beer			
Agency ale			
Agency beer			
Other income:			
Rentals			
Bottling profit or loss			
Miscellaneous			
Total profit			

Exhibit 19a. Supplementary Schedule

TRI-CITY BREWERY

SUPPLEMENTARY SCHEDULE TO REPORT OF OPERATIONS, ————, 1913

	.... Mos. to date		Corresponding period last year	
Distrib. expenses, city trade only:				
Wages—drivers and chauffeurs				
Horse-feed, gasoline				
Veterinary and shoeing				
Repairs to harness and vehicles				
Stable help				
Depreciation, horses and vehicles				
Total				
Distributed on per barrel basis, to				
Ale and porter				
Lager beer				
Distrib. exp., shipment trade only:				
Rent and storage				
Stable expense				
Trucking				
Miscellaneous				
Total				

(See pages 29, 30, 65.)

	.... Mos. to date		Corresponding period last year	
Distributed on per barrel basis:				
Ale and porter				
Lager beer				
Distributing expenses, applicable to entire trade, on per bbl. basis:				
Coopers' wages				
Shooks and supplies for coopers				
Depreciat'n of floating cooperage				
Total				
Distributed on per barrel basis:				
City ale				
City beer				
Shipment ale				
Shipment beer				

Exhibit 19b. Supplementary Schedule

TRI-CITY BREWERY

SUPPLEMENTARY SCHEDULE TO REPORT OF OPERATIONS, ————, 1913

	.... Mos. to date		Corresponding period last year	
Selling expenses, city trade only:				
Collectors' salaries				
Collectors' exp. and commis'ns				
Donations and subscriptions				
Signs and advertising				
Rep. to saloon fixtures and app.				
Total				

	.... Mos. to date		Corresponding period last year	
Distributed on per barrel basis to				
Ale				
Beer				
Selling exp., shipment trade only:				
Collectors' sal., com. and exp.				
Signs and advertising				
Repairs to saloon fixtures, etc.				
Sundries				
Total				
Distributed on per barrel basis to				
Ale				
Beer				
Sell'g exp., applicable to entire trade:				
Brewers' assessments				
Office expenses				
Legal expenses				
Bad debts				
Total				
Distributed to				
City ale				
City beer				
Shipment ale				
Shipment beer				

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